Efficacy of implantable cardioverter defibrillators in adults with congenital heart disease

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EFFICACY OF IMPLANTABLE CARDIOVERTER DEFIBRILLATORS IN ADULTS WITH CONGENITAL HEART DISEASE

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Background: To date, little is known about the value of implantable cardioverter defibrillators (ICD) in adults with congenital heart disease (CHD). We investigated the long term outcomes of ICD therapy in adults with CHD.

Methods: One-hundred thirty seven adults with CHD (mean age 40, 66% male) and ICD were identified from 9 centers in the Netherlands and Belgium. ICDs were implanted for primary prevention in 70 (51%) and secondary prevention in 67 (49%) patients. Diagnosis included tetralogy of Fallot (50%), septal defects (18%), (cc) transposition of the great arteries (12%), univentricular heart (7%), and other (13%). Patients with additional primary electrical disease or cardiomyopathy were excluded.

Results: Overall, 20 patients died (9 in the primary, 11 in the secondary prevention group) during a median follow-up of 4.6 years (range 1-13 years). The cause of death was heart failure (40%), sustained ventricular tachycardia (VT) (10%), sudden death (5%), non-cardiac death (20%) and unknown causes (25%). Thirteen patients (19%) received ≥1 appropriate shock in the primary prevention group and 27 patients (40%) in the secondary prevention group (P=0.004). Overall, secondary prevention (OR 3.4 P=0.03), and follow up duration (OR 1.2, P=0.005) predicted appropriate shocks. Independent predictors of appropriate shocks were documented nonsustained VT in the primary prevention group (OR 4.7, P=0.02) and any VT ablation in the secondary prevention group (OR 6.8, P=0.02). Inappropriate shocks (mean 5.0, range 1-27) occurred in 40 patients (29%). Patients with inappropriate shocks significantly underwent more ablations for supraventricular tachycardia (OR 3.0, P=0.01). Additionally, 36 patients (26%) experienced 51 implantation related complications: 12 early (24%) and 39 (76%) late of which 24 (47%) lead failures.

Conclusions: Adults with CHD experience a high rate of appropriate ICD shocks related to secondary prevention and longer follow-up duration. The high efficacy rate of ICDs however, is accompanied by a high rate of procedure related complications and inappropriate shocks.